

Exhibit A

PARTIES' PROPOSED CONSTRUCTIONS OF DISPUTED CLAIM TERMS AND IDENTIFICATION OF EVIDENCE

Claim Terms	Plaintiff's Proposed Construction	Defendants' Proposed Construction
means for sensing atrial depolarization signals (claims 1-9)	<p>The parties agree that this claim limitation is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>This phrase as a whole does not need to be construed and should be given its plain and ordinary meaning.</p> <p>Function: sensing atrial depolarization signals</p> <p>Structure: leads and P wave sensor and amplifier</p> <p><i>See</i> '949 patent, Abstract; Figs. 1-5; 1:18-30; 2:9-41; 3:49-57; 4:6-12; 5:22-31; 6:1-63; 7:22-9:26.</p>	<p>The parties agree that this claim limitation is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>Function: sensing atrial depolarization signals.</p> <p>Structure: the combination of lead 12 (including tip electrode 13 and conductor 26) and sense amplifier 24 in FIG. 4, including the accompanying textual description in the specification.</p>
means for sensing ventricular depolarization signals (claims 1-9)	<p>The parties agree that this claim limitation is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>This phrase as a whole does not need to be construed and should be given its plain and ordinary meaning.</p> <p>Function: sensing ventricular depolarization signals</p> <p>Structure: leads and R wave sensor and amplifier</p> <p><i>See</i> '949 patent, Abstract; Figs. 1-5; 1:18-30; 2:9-17; 2:36-41; 3:49-57; 4:6-12; 5:22-31; 6:1-63; 7:22-9:26.</p>	<p>The parties agree that this claim limitation is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>Function: sensing ventricular depolarization signals.</p> <p>Structure: the combination of lead 14 (including tip electrode 15 and conductor 28) and sense amplifier 30 in FIG. 4, including the accompanying textual description in the specification.</p>

Claim Terms	Plaintiff's Proposed Construction	Defendants' Proposed Construction
<p>control means for receiving said atrial and ventricular depolarization signals</p> <p>(claims 1-9)</p>	<p>The parties agree that this claim limitation is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>This phrase as a whole does not need to be construed and should be given its plain and ordinary meaning.</p> <p>Function: receiving said atrial and ventricular depolarization signals</p> <p>Structure: atrial rate detector, rate comparator, AV detector, AV comparator, sensor processor, pacemaker memory, and pacemaker logic circuitry programmed to produce an effective left heart AV interval corrected for pacing-induced timing delays</p> <p><i>See</i> '949 patent, Abstract; Figs. 4-5; 3:41-47; 4:9-20; 4:53-5:3; 5:22-7:20; 7:22-9:26.</p>	<p>The parties agree that this claim limitation is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>Function: receiving said atrial and ventricular depolarization signals.</p> <p>Structure: the combination of atrial rate detector 32, rate comparator 34, memory 36, AV detect circuitry 38, AV comparator 40, memory 42, logic circuitry 44, and sensor processor 54 in FIG. 4 (including the accompanying textual description in the specification).</p>
<p>atrial . . . pacing means for applying stimulating pulses to the atrium</p> <p>(claims 1-9)</p>	<p>The parties agree that this claim limitation is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>This phrase as a whole does not need to be construed and should be given its plain and ordinary meaning.</p> <p>Function: applying stimulating pulses to the atrium</p> <p>Structure: leads and atrial pacing circuitry</p>	<p>The parties agree that this claim limitation is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>Function: applying stimulating pulses to the atrium.</p> <p>Structure: the combination of block 46, conductor 52, and tip electrode 13 (of lead 12) in FIG. 4, including the accompanying textual description in the specification.</p>

Claim Terms	Plaintiff's Proposed Construction	Defendants' Proposed Construction
	<i>See</i> '949 patent, Abstract; Figs. 1-5; 1:18-30; 2:9-17; 2:36-41; 2:51-54; 3:49-57; 4:6-12; 5:22-31; 6:1-63; 7:22-9:26; 10:36-42.	
ventricular pacing means for applying stimulating pulses to . . . the ventricle (claims 1-9)	<p>The parties agree that this claim limitation is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>This phrase as a whole does not need to be construed and should be given its plain and ordinary meaning.</p> <p>Function: applying stimulating pulses to the ventricle</p> <p>Structure: leads and ventricular pacing circuitry</p> <p><i>See</i> '949 patent, Abstract; Figs. 1-5; 1:18-30; 2:9-17; 2:36-41; 2:52-55; 3:49-57; 4:6-15; 5:22-31; 6:1-63; 7:1-19; 9:39-46; 10:35-47.</p>	<p>The parties agree that this claim limitation is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>Function: applying stimulating pulses to the ventricle.</p> <p>Structure: the combination of block 48, conductor 50, and tip electrode 15 (of lead 14) in FIG. 4, including the accompanying textual description in the specification.</p>
(a) means coupled to said atrial sensing means for determining whether the rate at which said atrial depolarization signals occur are below a first predetermined value (claims 1-9)	<p>The parties agree that this claim limitation is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>This phrase as a whole does not need to be construed and should be given its plain and ordinary meaning.</p> <p>Function: determining whether the rate at which said atrial depolarization signals occur are below a first predetermined value</p> <p>Structure: atrial rate comparator and pacemaker</p>	<p>The parties agree that this claim limitation is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>Function: determining whether the rate at which said atrial depolarization signals occur are below a first predetermined value.</p> <p>Structure: the combination of rate detector circuit 32, rate comparator 34, and memory 36 in FIG. 4 (including the accompanying textual description in the specification), programmed to perform the algorithm at blocks 3 and 7 of FIG. 5 (as described in</p>

Claim Terms	Plaintiff's Proposed Construction	Defendants' Proposed Construction
	<p>memory</p> <p><i>See</i> '949 patent, Abstract; Figs. 4-5; 4:61-63; 5:32-33; 6:1-63; 7:22-9:26.</p>	<p>the specification).</p>
<p>(b) AV interval determining mean[s] coupled to said atrial and said ventricular sensing means for determining whether the time between the occurrence of an atrial depolarization signal and the next succeeding ventricular depolarization signal, on the average, exceeds a predetermined AV interval value and if so, triggering said ventricle pacing means to generate a series of ventricular stimulating pulses, each ventricular pulse following a predetermined time delay from the preceding atrial depolarization signal</p>	<p>The parties agree that this claim limitation is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>This phrase as a whole does not need to be construed and should be given its plain and ordinary meaning.</p> <p>Function: determining whether the time between the occurrence of an atrial depolarization signal and the next succeeding ventricular depolarization signal, on the average, exceeds a predetermined AV interval value and if so, triggering said ventricle pacing means to generate a series of ventricular stimulating pulses, each ventricular pulse following a predetermined time delay from the preceding atrial depolarization signal</p> <p>Structure: AV comparator, pacemaker logic circuitry</p> <p><i>See</i> '949 patent, Abstract; Figs. 4-5; 4:61-63; 5:32-33; 6:1-63; 7:11-20; 7:22-9:26.</p>	<p>The parties agree that this claim limitation is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>Function: determining whether the time between the occurrence of an atrial depolarization signal and the next succeeding ventricular depolarization signal, on the average, exceeds a predetermined AV interval value and if so, triggering said ventricle pacing means to generate a series of ventricular stimulating pulses, each ventricular pulse following a predetermined time delay from the preceding atrial depolarization signal.</p> <p>Structure: the combination of AV detection circuitry 38, AV comparator 40, memory 42, and logic circuitry 44 of FIG. 4 (including the accompanying textual description in the specification), programmed to perform the algorithm at blocks 1, 2, 4, 10, 11, 14, and 15 of FIG. 5 (and accompanying textual description in the specification).</p>

Claim Terms	Plaintiff's Proposed Construction	Defendants' Proposed Construction
(claims 1-9)		
(c) means for adjusting pacing induced AV interval and for producing an effective left heart AV interval corrected for pacing-induced timing delays which result from whether the [atrium] and/or ventricles are being paced or sensed (claims 1-9)	<p>The parties agree that this claim limitation is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>This phrase as a whole does not need to be construed and should be given its plain and ordinary meaning.</p> <p>Function: adjusting pacing-induced AV interval and producing an effective left heart AV interval corrected for pacing-induced timing delays which result from whether the [atrium] and/or ventricles are being paced or sensed</p> <p>Structure: pacemaker memory and pacemaker logic circuitry programmed to produce an effective left heart AV interval corrected for pacing-induced timing delays</p> <p><i>See</i> '949 patent, Abstract; Figs. 4-5; 3:41-47; 4:9-20; 4:53-5:3; 5:32-33; 6:1-63; 7:11-20; 7:22-9:26.</p>	<p>The parties agree that this claim limitation is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>Function: adjusting pacing-induced AV interval and producing an effective left heart AV interval corrected for pacing-induced timing delays which result from whether the [atrium] and/or ventricle[] are being paced or sensed</p> <p>Structure: logic circuitry 44 of FIG. 4 programmed to perform the formulas at blocks 14 and 15 of FIG. 5 (as described at col. 7:20-9:26 of the specification).</p>
means for detecting the presence or absence of a native atrial beat (claim 2)	<p>The parties agree that this claim limitation is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>This phrase as a whole does not need to be construed and should be given its plain and ordinary meaning.</p> <p>Function: detecting the presence or absence of a</p>	<p>The parties agree that this claim limitation is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>Function: detecting the presence or absence of a native atrial beat.</p> <p>Structure: the combination of atrial rate detector 32, sense amplifier 24, conductor 26 and tip electrode 13</p>

Claim Terms	Plaintiff's Proposed Construction	Defendants' Proposed Construction
	<p>native atrial beat</p> <p>Structure: P wave sensor and amplifier</p> <p><i>See</i> '949 patent, Abstract; Figs. 4-5; 6:1-63; 7:11-20; 7:22-9:26.</p>	<p>(of lead 12) in FIG. 4, including the accompanying textual description in the specification.</p>
<p>means for evaluating a predetermined number of AV intervals and determining the average thereof</p> <p>(claims 3, 7-9)</p>	<p>The parties agree that this claim limitation is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>This phrase as a whole does not need to be construed and should be given its plain and ordinary meaning.</p> <p>Function: evaluating a predetermined number of AV intervals and determining the average thereof</p> <p>Structure: AV detector and pacemaker memory</p> <p><i>See</i> '949 patent, Abstract; Figs. 4-5; 4:61-63; 5:32-33; 6:1-63; 7:22-9:26.</p>	<p>The parties agree that this claim limitation is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>Function: evaluating a predetermined number of AV intervals and determining the average thereof.</p> <p>Structure: AV detector 38 in FIG. 4 programmed to evaluate a number of AV intervals that will give a reliable average and programmed to compute the average thereof (as described at col. 6:40-63 of the specification) by executing the algorithm at blocks 1 and 2 of FIG. 5 (as described in the specification).</p>
<p>comparator means for comparing said average AV interval to said predetermined AV interval value</p> <p>(claims 3, 7-9)</p>	<p>The parties agree that this claim limitation is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>This phrase as a whole does not need to be construed and should be given its plain and ordinary meaning.</p> <p>Function: comparing said average AV interval to said predetermined AV interval value</p>	<p>The parties agree that this claim limitation is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>Function: comparing said average AV interval to said predetermined AV interval value.</p> <p>Structure: AV comparator 40 in FIG. 4 programmed to compare said average AV interval to a fixed threshold (as described at col. 6:40-63 of the</p>

Claim Terms	Plaintiff's Proposed Construction	Defendants' Proposed Construction
	<p>Structure: AV comparator and pacemaker memory</p> <p><i>See</i> '949 patent, Abstract; Figs. 4-5; 4:61-63; 5:32-33; 6:1-63; 7:22-9:26.</p>	specification) by executing the algorithm at block 4 of FIG. 5 (as described in the specification).
means for receiving external programming data wherein said predetermined AV interval value is programmable (claim 4)	<p>The parties agree that this claim limitation is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>This phrase as a whole does not need to be construed and should be given its plain and ordinary meaning.</p> <p>Function: receiving external programming data wherein said predetermined AV interval value is programmable</p> <p>Structure: pacemaker memory</p> <p><i>See</i> '949 patent, Abstract; Figs. 4-5; 4:61-5:1; 5:32-33; 5:40; 5:62-63; 6:1-63; 7:18; 7:22-9:26; '949 prosecution history, originally-filed claims.</p>	<p>The parties agree that this claim limitation is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>Defendants contend that this limitation is indefinite because there is no structure in the specification corresponding to the function of "receiving external programming data wherein said predetermined AV interval value is programmable."</p>
atrial rate detection means for detecting the time interval between a first and a second native atrial depolarization	<p>The parties agree that this claim limitation is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>This phrase as a whole does not need to be construed and should be given its plain and ordinary meaning.</p>	<p>The parties agree that this claim limitation is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>Function: detecting the time interval between a first and a second native atrial depolarization.</p>

Claim Terms	Plaintiff's Proposed Construction	Defendants' Proposed Construction
(claim 5)	<p>Function: detecting the time interval between a first and a second native atrial depolarization</p> <p>Structure: atrial rate detector</p> <p><i>See</i> '949 patent, Figs. 4-5; 6:1-63; 7:22-9:26.</p>	<p>Structure: rate detector circuit 32 of FIG. 4, including the accompanying textual description in the specification.</p>
atrial rate comparator means for determining if the rate at which said second [native] atrial depolarization occurs is below a second predetermined value (claim 5)	<p>The parties agree that this claim limitation is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>This phrase as a whole does not need to be construed and should be given its plain and ordinary meaning.</p> <p>Function: determining if the rate at which said second native atrial depolarization occurs is below a second predetermined value</p> <p>Structure: atrial rate comparator and pacemaker memory</p> <p><i>See</i> '949 patent, Abstract; Figs. 4-5; 4:61-63; 5:32-33; 6:1-63; 7:22-9:26.</p>	<p>The parties agree that this claim limitation is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>Function: determining if the rate at which said second native atrial depolarization occurs is below a second predetermined value.</p> <p>Structure: block 34 of FIG. 4 (including the accompanying textual description in the specification), programmed to perform the algorithm at block 7 of FIG. 5 (as described in the specification).</p>
comparator means for comparing native atrial rate to a discrete predetermined lower rate value	<p>The parties agree that this claim limitation is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>This phrase as a whole does not need to be construed and should be given its plain and ordinary meaning.</p>	<p>The parties agree that this claim limitation is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>Function: comparing native atrial rate to a discrete predetermined lower rate value.</p>

Claim Terms	Plaintiff's Proposed Construction	Defendants' Proposed Construction
(claim 6)	<p>Function: comparing native atrial rate to a discrete predetermined lower rate value</p> <p>Structure: atrial rate comparator and pacemaker memory</p> <p><i>See</i> '949 patent, Abstract; Figs. 4-5; 4:61-63; 5:32-33; 6:1-63; 7:22-9:26.</p>	<p>Structure: block 34 of FIG. 4 (including the accompanying textual description in the specification), programmed to perform the algorithm at block 7 of FIG. 5 (as described in the specification).</p>
<p>logic means coupled to said comparator means for activating said atrial pacing means and said ventricular pacing means depending on the results of the comparison</p> <p>(claim 6)</p>	<p>The parties agree that this claim limitation is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>This phrase as a whole does not need to be construed and should be given its plain and ordinary meaning.</p> <p>Function: activating said atrial pacing means and said ventricular pacing means depending on the results of the comparison</p> <p>Structure: pacemaker logic circuitry and pacemaker memory</p> <p><i>See</i> '949 patent, Abstract; Figs. 4-5; 4:61-63; 5:32-33; 6:1-63; 7:11-20; 7:22-9:26.</p>	<p>The parties agree that this claim limitation is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>Function: activating said atrial pacing means and said ventricular pacing means depending on the results of the comparison.</p> <p>Structure: memory 36, memory 42, and logic circuitry 44 of FIG. 4 programmed to perform the algorithm depicted in FIG. 5 (as described at col. 7:20-9:26 of the specification).</p>
comparator means coupled to said atrial sensing means for comparing measured	<p>The parties agree that this claim limitation is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>This phrase as a whole does not need to be</p>	<p>The parties agree that this claim limitation is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>Function: comparing measured atrial rate with a</p>

Claim Terms	Plaintiff's Proposed Construction	Defendants' Proposed Construction
atrial rate with a predetermined reference value and controlling said atrial and ventricular pacing means (claim 7)	<p>construed and should be given its plain and ordinary meaning.</p> <p>Function: comparing measured atrial rate with a predetermined reference value and controlling said atrial and ventricular pacing means</p> <p>Structure: atrial rate comparator, pacemaker logic circuitry and pacemaker memory</p> <p><i>See</i> '949 patent, Abstract; Figs. 4-5; 4:61-63; 5:32-33; 6:1-63; 7:22-9:26.</p>	<p>predetermined reference value and controlling said atrial and ventricular pacing means.</p> <p>Structure: the combination of block 34, memory 36, and logic circuitry 44 of FIG. 4 programmed to perform the algorithm at blocks 7, 12, and 13 of FIG. 5 (as described at col. 7:20-9:26 of the specification).</p>
means for determining a right heart AV interval to optimize said produced left heart AV interval (claim 8)	<p>The parties agree that this claim limitation is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>This phrase as a whole does not need to be construed and should be given its plain and ordinary meaning.</p> <p>Function: determining a right heart AV interval to optimize said produced left heart AV interval</p> <p>Structure: pacemaker memory and pacemaker logic circuitry programmed to produce an effective left heart AV interval corrected for pacing-induced timing delays</p> <p><i>See</i> '949 patent, Abstract; Figs. 4-5; 3:41-47; 4:9-20; 4:53-5:3; 5:32-33; 6:1-63; 7:11-20; 7:22-9:26.</p>	<p>The parties agree that this claim limitation is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>Function: determining a right heart AV interval to optimize said produced left heart AV interval.</p> <p>Structure: the combination of rate detector circuit 32, rate comparator 34, memory 36, AV detect circuitry 38, AV comparator 40, memory 42, and logic circuitry 44 of FIG. 4 (including the accompanying textual description in the specification), programmed to perform the algorithm depicted in FIG. 5 (as described at col. 7:20-9:26 of the specification).</p>

Claim Terms	Plaintiff's Proposed Construction	Defendants' Proposed Construction
<p>adjusting means produces the effective left heart AV interval as a function of a predetermined lower rate or sensor rate provided by a sensor coupled thereto and whether either the atrium or ventricle or both are paced or sensed</p> <p>(claim 9)</p>	<p>The parties agree that this claim limitation is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>The “adjusting means” recited in claim 9 is the “means for adjusting” recited in claim 1(c).</p> <p>This phrase as a whole does not need to be construed and should be given its plain and ordinary meaning.</p> <p>Function: producing the effective left heart AV interval as a function of a predetermined lower rate or sensor rate provided by a sensor coupled thereto and whether either the atrium or ventricle or both are paced or sensed</p> <p>Structure: pacemaker memory and pacemaker logic circuitry programmed to produce an effective left heart AV interval corrected for pacing-induced timing delays</p> <p><i>See</i> '949 patent, Abstract; Figs. 4-5; 3:41-47; 4:9-20; 4:53-5:3; 5:32-33; 6:1-63; 7:11-20; 7:22-9:26.</p>	<p>The parties agree that this claim limitation is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>Defendants wish to clarify that the “adjusting means” recited in claim 9 is the “means for adjusting . . .” recited in claim 1.</p> <p>Function: producing the effective left heart AV interval as a function of a predetermined lower rate or sensor rate provided by a sensor coupled thereto and whether either the atrium or ventricle or both are paced or sensed.</p> <p>Structure: logic circuitry 44 of FIG. 4 programmed to perform the formulas at blocks 14 and 15 of FIG. 5 (as described at col. 7:20-9:26 of the specification).</p>